

AMENDMENTS TO THE CLAIMS



Claims 1-10. (Canceled)

11. (New) A system for transplant production, comprising:

- a light shielding closed structure including a surrounding thermally insulated wall;
- an air conditioner in said closed structure for controlling temperature and humidity of air in said closed structure;
- a box-shaped culturing module, having a front face opening, within said closed structure;
- transplant production shelves arranged vertically in said culturing module;
- a plug tray, for holding a plant growing medium, on each of said shelves;
- a sub-irrigation unit, capable of providing irrigation from a bottom of a corresponding said plug tray, on said each of said shelves;
- an artificial lighting unit, for irradiating light from above to said corresponding said plug tray, associated with said each of said shelves; and
- a fan, associated with said each of said shelves, for sucking air, the temperature and humidity of which have been controlled by said air conditioner, from said front face opening of said culturing module and conveying the air toward a rear end of said culturing module so as to circulate the air within said closed structure.

12. (New) The system according to claim 11, further comprising:

- another air conditioner in said closed structure for controlling temperature and humidity of air in said closed structure;
- another box-shaped culturing module, having another front face opening, within said closed structure;
- additional transplant production shelves arranged vertically in said another culturing module;
- another plug tray, for holding a plant growing medium, on each of said additional shelves;

another sub-irrigation unit, capable of providing irrigation from a bottom of a corresponding said another plug tray, on said each of said additional shelves;

another artificial lighting unit, for irradiating light from above to said corresponding said another plug tray, associated with said each of said additional shelves; and

another fan, associated with said each of said additional shelves, for sucking air, the temperature and humidity of which have been controlled by said another air conditioner, from said front face opening of said another culturing module and conveying this air toward a rear end of said another culturing module so as to circulate this air within said closed structure.

13. (New) The system according to claim 12, wherein
said air conditioner is fixed to an upper portion of a wall of said closed structure at the rear end of said culturing module, and

said another air conditioner is fixed to an upper portion of a wall of said closed structure at the rear end of said another culturing module.

14. (New) The system according to claim 13, wherein
said fan is at a rear portion of said each of said shelves and is generally beneath said air conditioner, and

said another fan is at a rear portion of said each of said additional shelves and is generally beneath said another air conditioner.

15. (New) The system according to claim 14, wherein
said wall to which said air conditioner is fixed is spaced from the rear end of said culturing module by a distance within a range of from about 50 mm to 300 mm, and
said wall to which said another air conditioner is fixed is spaced from the rear end of said another culturing module by a distance within a range of from about 50 mm to 300 mm.

16. (New) The system according to claim 13, wherein
said wall to which said air conditioner is fixed is spaced from the rear end of said
culturing module by a distance within a range of from about 50 mm to 300 mm, and
said wall to which said another air conditioner is fixed is spaced from the rear end of said
another culturing module by a distance within a range of from about 50 mm to 300 mm.

17. (New) The system according to claim 12, wherein
the rear end of said culturing module is spaced from a wall of said closed structure by a
distance within a range of from about 50 mm to 300 mm, and
the rear end of said another culturing module is spaced from a wall of said closed
structure by a distance within a range of from about 50 mm to 300 mm.

18. (New) The system according to claim 11, wherein
said air conditioner is fixed to an upper portion of a wall of said closed structure at the
rear of said culturing module.

19. (New) The system according to claim 18, wherein
said fan is at a rear portion of said each of said shelves and is generally beneath said air
conditioner.

20. (New) The system according to claim 19, wherein
said wall to which said air conditioner is fixed is spaced from the rear end of said
culturing module by a distance within a range of from about 50 mm to 300 mm.

21. (New) The system according to claim 18, wherein
said wall to which said air conditioner is fixed is spaced from the rear end of said
culturing module by a distance within a range of from about 50 mm to 300 mm.

22. (New) The system according to claim 11, wherein
said sub-irrigation unit includes

- (i) a shallow quadrangular box-shaped irrigation tray having three sides surrounded by side walls and having a bottom wall face,
- (ii) a water supply pipe within said irrigation tray for supplying water into said irrigation tray,
- (iii) a drainage groove joined to said bottom wall face at a side of said irrigation tray having no side wall,
- (iv) a dam partitioning said drainage groove and said bottom wall face, and
- (v) structure on said bottom wall face for maintaining a gap between said bottom wall face and a bottom of said corresponding said plug tray at a time of mounting said corresponding said plug tray on said bottom wall face.

23. (New) The system according to claim 22, wherein
said structure for maintaining a gap between said bottom wall face and the bottom of said corresponding said plug tray comprises ribs extending on said bottom wall face in a direction from said water supply pipe to said drainage groove.

24. (New) The system according to claim 22, wherein
said structure for maintaining a gap between said bottom wall face and the bottom of said corresponding said plug tray comprises protrusions formed on a back surface of a perforated lower tray positioned between said bottom wall face and said corresponding said plug tray.

25. (New) The system according to claim 22, wherein
said dam defines at least one cutout.

26. (New) The system according to claim 22, wherein
said bottom wall face is inclined in a direction away from said drainage groove.

27. (New) The system according to claim 11, further comprising:

another box-shaped culturing module, having another front face opening, within said closed structure;

additional transplant production shelves arranged vertically in said another culturing module;

another plug tray, for holding a plant growing medium, on each of said additional shelves;

another sub-irrigation unit, capable of providing irrigation from a bottom of a corresponding said another plug tray, on said each of said additional shelves;

another artificial lighting unit, for irradiating light from above to said corresponding said another plug tray, associated with said each of said additional shelves; and

another fan, associated with said each of said additional shelves, for sucking air, temperature and humidity of which have been controlled, from said front face opening of said another culturing module and conveying this air toward a rear of said another culturing module so as to circulate this air within said closed structure,

wherein said culturing module and said another culturing module are linearly arranged with said front face opening and said another front face opening facing in the same direction.

28. (New) The system according to claim 11, further comprising:

another box-shaped culturing module, having another front face opening, within said closed structure;

additional transplant production shelves arranged vertically in said another culturing module;

another plug tray, for holding a plant growing medium, on each of said additional shelves;

another sub-irrigation unit, capable of providing irrigation from a bottom of a corresponding said another plug tray, on said each of said additional shelves;

another artificial lighting unit, for irradiating light from above to said corresponding said another plug tray, associated with said each of said additional shelves; and

another fan, associated with said each of said additional shelves, for sucking air, temperature and humidity of which have been controlled, from said front face opening of said another culturing module and conveying this air toward a rear of said another culturing module so as to circulate this air within said closed structure,

wherein said culturing module and said another culturing module are arranged such that said front face opening and said another front face opening oppose one another so as to define a work space and an air circulation path therebetween.

29. (New) The system according to claim 11, further comprising:

a carbon dioxide analyzer within said closed structure; and

a carbon dioxide cylinder outside said closed structure for supplying a predetermined amount of carbon dioxide into said closed structure in accordance with an electrical signal sent from said carbon dioxide analyzer.

30. (New) The system according to claim 11, wherein

the rear end of said culturing module is spaced from a wall of said closed structure by a distance within a range of from about 50 mm to 300 mm.